

**OBSERVATIONS ON A NUMBER OF
PLECTOPYLIS COLLECTED IN TONKIN BY
M. MANSUY WITH DESCRIPTION OF
FOUR NEW SPECIES.**

By G. K. GUDE, F. Z. S.

A small collection of *Plectopylis* from Tonkin, belonging to the School of Mines, Paris, has been kindly placed in my hands by M. Dautzenberg. The shells were collected by M. Mansuy, and are of interest, not only on account of the new species, but because of a considerable series of *P. Giardi* which has enabled me to ascertain the extent to which the armatures vary, several specimens exhibiting a curious combination of old and new barriers.

Of the new species, two are allied to *P. tenuis*, being, like that species, somewhat abnormal members of the section *Sinicola* and they still further tend to connect this section with the section *Endoplon*.

One — *P. soror* — is of special interest, since it presents a feature I have not observed in any other species: a curious curved ridge given off from the upper side of the third palatal fold.

Of interest also was the discovery in *P. infralevis* of an insect behind the barriers, demonstrating that these molluscs, in spite of their elaborate armatures, are not immune from attacks by insects. These structures, no doubt, protect the animals from direct attack, but it is conceivable that certain predatory creatures may oviposit behind the barriers, and I was therefore not altogether surprised on opening a specimen of *P. infralevis* to find the desiccated body of a minute insect. In endeavouring to

extract the insect it was damaged, so that I was unable to recognize its order with certainty, but sufficiently remained to lead me to think it was the larva of some minute *Coleopteron*. It measured 1,25 mm. in length. Some information on the subject of attacks by predatory insects and other animals on molluscs may be found in a paper of mine in *Science Gossip*, New Series, vol. III, 1896, p. 88.

PLECTOPYLIS GIARDI H. Fischer

H. FISCHER, *Bull. Scient. France et Belg.*, XXVIII (1898), p. 320, Pl. XVII, fig. 17-21.

GUDE, *Science Gossip N. S.*, vol. V (1899), p. 332, fig. 95. *Ibid.*, vol. VI (1899), p. 76, fig. 103.

Cao Bang (Billet), Quang-Huyen (Mansuy).

A considerable series of specimens of this species was received, presenting some variation in size, the smaller specimens ranging from 13 to 17 mm. in diameter. This form may be designated as var. *minor*. The larger shells measure from 19 to 23 mm. in diameter. In several of the smaller specimens a double series of palatal folds was visible through the shell wall, and thinking that these shells might differ from *P. Giardi* I opened a couple of specimens, and I was surprised to find a complete series of new barriers close to a partially absorbed older series, the two series of parietal barriers being, in fact, superimposed. Behind the anterior vertical plate, but in front of the posterior one was a low parallel ridge, the remains of the previous anterior plate; while behind the posterior plate was the partly absorbed, posterior plate of the older series (see fig. 1^b) (1). Of the palatal armature only the bases of the older series could be discerned, their absorption being in a much more advanced state. An analogous case was observ-

(1) Les figures insérées dans le texte ont été clichées d'après les dessins originaux de l'auteur.

ed in a specimen of *P. Mansuyi* (*vide infra*), but in that shell the parietal barriers of the older series were the first to be absorbed and of the later series to first to be formed. In that case, moreover, the two sets were not superimposed but nearly $1/4$ of a whorl distant.

The only other variation in the armature I was able to observe in the specimens of *P. Giardi* opened was in the anterior parietal plate, which in some cases was longer than in the type, reaching close up to the horizontal fold above it. Of the larger specimens, one with the parietal ridge at the aperture only just commenced, showed some deviation from the normal armature. The anterior parietal vertical plate was found to be triangularly dilated



Fig. 1^a

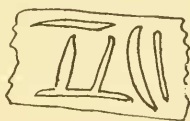


Fig. 1^b

at its lower extremity, but I do not attach much importance to this feature. A more striking difference was seen in the palatal barriers; the second and third folds having the vertical portions very short, while their upper anterior and lower posterior horizontal portions are considerably elongated; the fourth, on the other hand, has the vertical portion more elongated, being nearly twice as long as the fifth and three times the length of the third; the fifth fold is normal, but the sixth is more elongated though less elevated and nearer the lower suture than in the type. Between the posterior terminations of the second and third folds occurs a low denticle not observable in the type (see fig. 1^a).

Although I do not feel inclined to base a new species on this single specimen, otherwise undistinguishable from *P. Giardi*, the above noted deviations from the normal structures are so considerable that I have thought it advisable to give illustrations of them. The same specimen possesses an older set of barriers under the parietal ridge of the aperture. This conforms in every respect to the later series; the parietal barriers are slightly attenuated, but the palatal folds are already much disintegrated; in this respect it therefore accords with the case cited above for the var. *minor*.

PLECTOPYLIS MANSUYI n. sp.

(Pl. VII, fig. 1, 2, 3).

Testa parva, dextrorsa, late umbilicata, discoidea, subtranslucens, plus minusve intense fuscescens. Spira depressiuscula, apice prominulo. Anfr. 6-6 1/2 convexi, lente et regulariter crescentes, sutura impressa juncti; primi læves, nitidi, sequentes costulati, ultimus inferne minute striatus, ac supra peripheriam subangulatus, inferne læviter compressus, circa umbilicum obtuse angulatus, prope aperturam paululum dilatatus, vix descendens. Apertura obliqua, subauriculata. Peristoma albidum vel lividum, paululum dilatatum, valde reflexum, marginibus callo crassissimo plicam obliquam præbente, junctis.

Laminæ parietales 2 verticales, antica brevior, flexuosa, postica incurvata. Laminæ palatales 5, callo verticali junctæ: prima (prope suturam) minima, fere horizontalis, sequentes 3 semicirculares, subæquales, obliquæ, postice læviter denticulatæ.

Shell dextral, widely umbilicated, discoid, almost transparent, from pale to ruddy corneous, the nepionic whorls smooth, shining, the later ones dull, finely and regularly ribbed above, the riblets ceasing at or near the periphery,

finely striated and polished below. Spire low, apex prominent, suture impressed. Whorls 6-6 $\frac{1}{2}$, convex, increasing slowly and regularly, the last subangulated above the periphery, somewhat compressed below, obtusely angulated round the wide open umbilicus, slightly dilated near the mouth, scarcely descending in front. Aperture subauriculate, oblique, margins distant; peristome whitish or livid, thickened, slightly expanded and strongly reflexed, the margins united by a raised flexuous callus which bears a short, obliquely ascending entering fold; upper margin at first strongly arcuate, then slightly inflexed and projecting forward, outer and basal curved, columellar straight, its termination slightly contracted.

Parietal armature (fig. 2^d) composed of two vertical



Fig. 2^a

Fig. 2^b

Fig. 2^c

Fig. 2^d

Fig. 2^e

plates, the anterior the shorter of the two, flexuous, with a short slender horizontal fold anteriorly above; the junction slightly notched, its lower extremity giving off anteriorly a short stout support, and a free horizontal lamella, its anterior extremity even with the anterior plate, its posterior extremity reaching close to the lower extremity of the posterior plate, which is curved, obliquely descending backwards with a short support posteriorly at its upper extremity.

Palatal armature (fig. 2^e), composed of five folds obliquely ascending forwards: the first smallest, near the suture, nearly horizontal, both extremities attenuated and elongated; the next three semicircular, about equal and more oblique than the first, each with a slight denticle

posteriorly ; the fifth low and slender, its anterior half oblique, its posterior half nearly horizontal and also with a slight denticle posteriorly ; all five united by a low vertical callus, and distinctly visible outside through the shell wall.

Diam. maj. 7, min. 6,25 mm. Alt. 4 mm. (type).

— — 5.75 — 4,75 — — 2,5.

Hab. : Ha-Lang, Tonkin.

Type in the collection of the School of Mines, Paris.

This, the smallest known member of the genus, is allied to *P. Anceyi*, but in addition to being smaller than that species, it has a more elevated spire, lacks the spiral striæ and has a glossy base. In the parietal armature it differs in the more obliquely descending posterior plate, and in the presence of a free fold below the anterior vertical plate and a horizontal fold given off from the upper extremity of the anterior plate. In its palatal armature it differs in having only five folds instead of six and they are much less attenuated, the four lower ones being provided with a minute denticle posteriorly. The parietal armature somewhat resembles that of *P. tenuis*, but differs in having the upper horizontal fold united to the anterior plate, whereas in *P. tenuis* that plate is free and much shorter.

A specimen with more elevated spire and having, the entering fold on the parietal wall further back, not united to the parietal ridge, appeared at first distinct ; the palatal barriers, moreover, could be seen much further back, being in the middle of the last whorl. On breaking away a part of the shell wall I was surprised to find the palatal and parietal barriers some distance apart, the latter being in the normal position, and a closer inspection revealed the fact that the palatal folds were those of an older series, the corresponding parietal plates being nearly absorbed, their bases being just discernible ; of the later series the parietal barriers are complete, but of

the palatal armature only the fifth fold near the lower suture is formed. This is the first instance which has come under my observation where a series of barriers is in course of formation and it is interesting to find that the parietal barriers are the first to be formed : and also the first to be absorbed.

PLECTOPYLIS INFRALEVIS n. sp.

(Pl. VII, fig. 4, 5, 6).

Testa dextrorsa, late umbilicata, discoidea, fulvo-cornea. Spira depressa, apice prominulo. Anfr. 7 paululum convexi, regulariter crescentes, sutura parum profunda juncti, strii incrementi et lineis spiralibus exilissimis superne decussati, ultimus inferne nitens, supra peripheriam subangulatus, inferne rotundatus, circa umbilicum obscure angulatus, prope aperturam vix dilatatus, breviter descendens et deflexus. Apertura subovata, obliqua, marginibus callo flexuoso, denticulum debilem, elongatum et obliquum ferente, junctis. Peristoma paululum incrassatum ac reflexum.

Laminæ parietales 2 verticales, divergentes, antica brevissima. Laminæ palatales 6, prima depressa, ceteræ semicirculares.

Shell dextral, widely umbilicated, discoid, fulvous brown, dull above, shining below, finely striated and decussated by close fine spiral lines as far as the periphery. Spire depressed, apex prominent, suture shallow. Whorls 7, slightly convex, increasing regularly, the last subangulated above the periphery, rather tumid below, obscurely angulated round the wide funnel shaped umbilicus, a trifle dilated behind the peristome, shortly descending and rather deeply deflexed in front. Aperture subovate, oblique, margins convergent, united by a slight flexuous callus on the parietal wall, which bears an elongated oblique denticle, about 1 mm. from the edge of the callus.

Peristome a little thickened and reflexed, upper margin arcuate, outer and basal curved, columellar nearly straight, ascending obliquely and slightly impinging upon the umbilicus.

Parietal armature (fig. 3^d), composed of two vertical divergent plates, the anterior one shortest, with a low parallel ridge posteriorly, the upper extremity truncate, the lower dilated, with a short support on each side; above it occurs a short free horizontal fold, level with the upper extremity of the posterior plate which bears a short support posteriorly above and is obliquely reflexed posteriorly and attenuated below.

Palatal armature (fig. 3^e), composed of six folds, the



Fig. 3^a



Fig. 3^b



Fig. 3^c



Fig. 3^d



Fig. 3^e

first low, nearly parallel with and close to the upper suture, the others semicircular; the second nearly horizontal with a slight elongated denticle posteriorly; the third, fourth, and fifth obliquely ascending forwards each giving off from the posterior extremity above an obliquely ascending short low fold; the sixth nearly horizontal, slightly notched near its posterior extremity.

Diam maj. : 13 mm. ; min. 11 mm. ; alt. 7 mm.

Hab. : Quang Huyen, Tonkin.

Type in the collection of the School of Mines, Paris.

This new species is related to *P. tenuis* which it resembles in the parietal armature, but the anterior horizontal plate, which in *P. tenuis* obliquely descends backwards is here directed towards the aperture, and the lower hori-

zontal fold which in *P. tenuis* is free, is here united to the lower extremity of the anterior vertical plate; while the upper horizontal fold is shorter and more distant from the anterior plate. The parallel ridge on the posterior side of the anterior plate is possibly the remains of an earlier set of barriers, judging from an analogous case observed in a specimen of *P. Giardi*. The shell is larger and more solid than *P. tenuis*; the spire is more elevated, the last whorl more deflexed in front and the aperture is more dilated.

The duplication of the second, third, fourth, and fifth palatal folds is a feature not before observed by me in Tonkin species, and known only in the Section *Endothyra*, where it occurs in most of the species. The second fold has simply an elongated denticle posteriorly, but the third, fourth, and fifth have each, besides the smaller low parallel ridge, a heavy deposit of callus in the sinus formed by their two extremities, a feature difficult to show in the diagram. I was at first inclined to consider these accessory barriers as remains of an earlier series, but in a second specimen which appears to be not quite mature the anterior barriers are not so much developed as those in the type, while the posterior series is still more rudimentary, pointing to the probability of their being of more recent origin. This view derives further support from the presence of the ridges posteriorly to the third and fourth plates in *P. soror* (*vide infra*) and the four posterior denticles in *P. Mansuyi*, all which structures I regard as homologous to those in the present species.

PLECTOPYLIS SUPRAFILARIS n. sp.

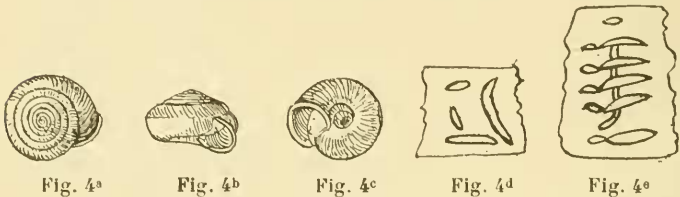
(Pl. VII, fig. 7, 8, 9)

Testa dextrorsa, modice umbilicata, discoidea, corneo-fulva. Spira depresso-conoidea, apice prominulo. Anfr. 7 regulariter crescentes, sutura parum profunda juncti, primus lævis, se-

quentes $1\frac{1}{2}$ tenuiter costulati, cæteri superne complanati, striis incrementi et funiculis decurrentibus filiformibus subtiliter decussati; anfr. ultimus ad peripheriam rotundatus, inferne lævis ac politus, circa umbilicum obscure angulatus, aperturam versus subdilatus ac paululum descendens. Apertura semilunaris, obliqua, marginibus callo debili, denticulum minutum et elongatum præbente, junctis. Peristoma album incrassatum et reflexum.

Laminæ parietales 2, postica incurvata, obliqua, antica brevissima. Laminæ palatales transversæ 6, prima debilis, ceteræ semicirculares, funiculo verticali junctæ.

Shell dextral, moderately umbilicated, discoid, dull corneous, the nepionic whorl smooth, the next $1\frac{1}{2}$ finely ribbed, the remaining whorls finely striated, decussated by fine raised thread-like spirals as far as the periphery,



where the sculpture suddenly ceases and below which the shell is smooth and polished. Spire depressed-conoid, apex prominent, suture shallow. Whorls 7, increasing regularly, flattened above, rounded at the periphery and below, obscurely angulated round the moderate, deep, open umbilicus; last whorl slightly widening towards the mouth, shortly descending in front. Aperture rotundate-lunate, oblique, margins convergent, united by a slight sinuous callus on the parietal wall with a small elongated denticle near the edge. Peristome white, thickened and reflexed, margins evenly rounded, the columellar scarcely dilated and slightly impinging upon the umbilicus.

Parietal armature (fig. 4¹). composed of two vertical plates, the posterior curved, obliquely descending backwards, its upper extremity slightly reflexed; anterior plate very short, with a short horizontal fold some distance above it and close to its lower extremity a longer horizontal fold, reaching nearly as far as the posterior plate.

Palatal armature (fig. 4²), composed of six transverse folds, the first low and short, the others semicircular, more or less horizontal, and notched near their posterior extremities, the fifth curved, having both its extremities ascending; the second, third, fourth, and fifth are connected by a low vertical ridge which projects obliquely backwards below the fifth fold, giving the latter the appearance of being bifurcated.

Diam. maj. : 12,5; min. 11 mm.; alt. 7 mm.

Hab. : Quang Huyen, Tonkin.

Type in the collection of the School of Mines, Paris.

This and the next species belong to the section *Sivicola*. *P. suprafilaris* differs from *P. infralevis* in having a more elevated spire, a narrower umbilicus, and a more rotundate aperture, while the spirals are much coarser and descend as far as the periphery. It differs also in the parietal armature in the anterior vertical plate and the horizontal folds being much shorter, and in the posterior plate being more oblique. In its palatal armature it resembles *P. Muspratti* in having the four folds united by a low vertical ridge which projects obliquely below the fifth fold; that species, however, is sinistral.

PLECTOPYLIS SOROR n. sp.

(Pl. VII, fig. 10, 11, 12)

Testa præcedenti similis, sed magis depressa superne et latius umbilicata; anfr. ultimus supra peripheriam obtuse angulatus, prope aperturam magis descendens; striæ incre-

menti fortiores, spirales debiliores. Peristoma magis dilatatum, marginibus magis approximatis, denticulo fortiore et obliquiore.

Lamina parietalis unica. Laminæ palatales 6 æquidistantes, horizontales, prima lævis, cæteræ semicirculares, inter quintam et sextam denticulus brevis conspicitur.

Similar to the preceding species but the whorls are more flattened above, the last whorl is obtusely angulated above the periphery and descends more in front; the spire is more depressed and the umbilicus wider, the striae are stronger but the spirals much finer and weaker and they extend below the periphery; the peristome is more expanded, its margins more approaching, the parietal ridge less flexuous, and the denticle near its edge stronger and more oblique.



Fig. 5^a



Fig. 5^b



Fig. 5^c



Fig. 5^d



Fig. 5^e

Parietal armature (fig. 5^d) composed of one vertical plate obliquely deflexed posteriorly, its upper extremity truncate, the lower portion more elevated than the upper portion; in front of its upper extremity occurs a short horizontal fold, and in front of its lower extremity an elongated denticle.

Palatal armature (fig. 5^e) composed of six equidistant horizontal folds, the first low and short near the upper suture, the others semicircular; the second, third, fourth, and fifth attenuated and notched posteriorly, the third having a curved ridge given off from the upper side before the notch, the fourth with a short oblique free ridge posterior-

ly ; a short denticle occurs between the fifth and sixth folds posteriorly.

Diam. maj. 14, min. 12 mm., alt. 7 mm.

Hab. : Quang Huyen, Tonkin.

Type in the collection of the School of Mines, Paris.

In its parietal armature the present species differs from *P. suprafilaris* in the absence of the anterior vertical plate and in the lower horizontal fold of that species being here reduced to an elongated denticle. In its palatal armature it differs in the absence of the vertical ridge uniting four of the folds, and notably in the presence of the accessory posterior ridges of the third and fourth folds, that of the third fold being the longer of the two and curving round the posterior notched extremity. This feature I have not observed in any other species. The barriers are also situate nearer the aperture than in *P. suprafilaris*.

G. K. G.
